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LESSONS ON CORN FOR RURAL ELEMENTARY SCHOOLS.

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NEED OF STUDY OF CORN IN SCHOOLS.

For a considerable number of years more attention has been given by farmers to the production and improvement of corn than to any other grain or general farm crop, yet for no 10-year period has the average corn yield of the United States exceeded 28 bushels per acre. No State has averaged for any year over 54 bushels per acre, yet in practically every section of the United States yields of more than 100 bushels per acre have been produced. With the rapid spread of the work of boys' clubs the need of the study of corn in the schools has come to be better appreciated. The purpose of this bulletin is to furnish lessons for developing the real educational value of this study.

LESSON I.

Subject.—Kinds of corn.

Topics for study.—Points of difference between flint, pop, sweet, and dent corn. What is each kind mostly used for? How many

Note.—A revision of Farmers' Bulletin 617, the original edition of which was issued Oct. 22, 1914. Furnishes elementary lessons on corn and is of interest to rural-school teachers in all parts of the United States.

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kinds are grown in your school district? Which has proved most profitable? Which produces the larger annual crop, corn or wheat?

Exercises.—Have six or more pupils bring 10 ears of the best corn they can find at home. It would be better if all could bring the same kind of corn. Before the pupils attempt to select the most desirable ears for seed have them read the references. Then have the pupils select 20 or 30 of the best-looking ears for use in the lesson on judging corn.

References.[1]—Farmers' Bulletin 229, pp. 8, 9; 253,* pp. 6, 7; 415, pp. 4, 5; 537, pp. 18, 19; 553; 554.

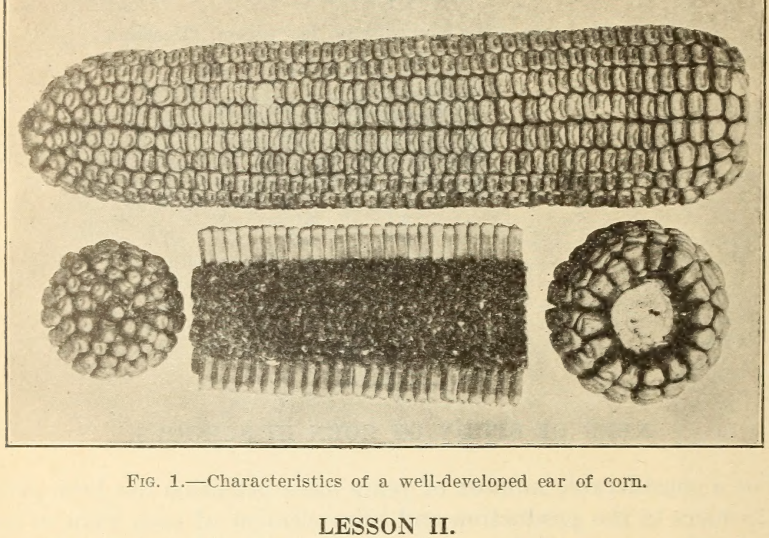

FIG. 1.—Characteristics of a well-developed ear of corn.

LESSON II.

Subject.—Judging corn.

Topics for study.—Object of corn judging. Value of "corn score card." Preparation of local corn exhibit. Learn how to judge of the maturity, vitality, and distinctness of type of corn.

Exercises.—Provide each pupil with 10 ears of corn and let him practice scoring, using the score card given. Each pupil should score a half dozen or more 10-ear samples before this exercise is passed by. Number all of the ears from 1 to 20 or 1 to 30, as the case may be, by tying to each a small numbered tag or sticking a numbered peg into the butt of each cob. Have each pupil provide himself with a score card ruled as shown below, providing one column for each ear of corn. The figures in the score card just to the left of the first perpendicular line show the number of "points" that should be

[1] Farmers' Bulletins marked with an asterisk (*) throughout this publication are not available for free distribution, but may be secured from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents a copy.

given for a perfect ear, e. g., if the pupil thinks ear No. 4 is nearly perfect in shape he would probably mark 9 in line 2, column 4, as shown in the table. Each pupil should examine carefully each ear of corn and put down on his score card, in the column of the same number as the ear of corn, his estimate of the qualities named on each line at the left, except line 4—vitality—which should not be filled in until after the seed is tested by the method explained on page 4.

Then compute the germinating value of the different samples on the basis of 20 for a perfect ear, as shown in the score card, and give each ear its proper rating in line 4 of the score card. Now add up the different columns of figures in the score card, and by means of the totals select the best five ears.

Score card for corn.

Points.		1	2	3	4	5	6	7	8	9	10
1. Trueness to type	10										
2. Shape of ear	10										
3. Purity of color in grain and cob	5										
4. Vitality, maturity, germinating power	20										
5. Tips of ears	5										
6. Butts of ears	5										
7. Uniformity of kernels	5										
8. Shape of kernels	5										
9. Length of ear	5										
10. Circumference of ear	5										
11. Furrows between rows	5										
12. Space between kernels at cob	10										
13. Proportion of corn to cob	10										
Total	100										

In order to understand the meaning of all the points listed in this score card it is well to write to the State agricultural college or to the State corn breeders' association, if there is one, for an explanation of the official score card used in your State; or it may be possible to get some one from the agricultural college or other agricultural school to come to your school or county teachers' meeting and explain the score card fully.

References.—Corn score card published by the State agricultural college. State corn breeders' association, if there is one.

LESSON III.

Subject.—Seed corn.

Topics for study.—What constitutes good seed corn? Where to obtain the best possible seed corn. How to gather seed corn. Treatment of seed immediately after gathering. Destroying weevils or grain moths. Winter storage of seed corn. Method of shelling.

Exercises.—Compare the methods outlined in Farmers' Bulletin 415 with those in practice in the vicinity of the school. What advantages for the various methods are apparent? See that the pupils

actually perform as many as time will permit of the operations for gathering and storing seed corn as are outlined in this particular bulletin. The United States Census Report of 1910 gives the national corn acreage as 98,382,665 acres. If seed selection could increase the yield 3 bushels each acre, what would be the increased income at 60 cents a bushel?

References.—Farmers' Bulletins 253,* 415.

LESSON IV.

Subject.—Testing seed corn.

Topics for study.—Importance of testing the vitality of corn. How to make germinating boxes. Care of the germinating box. Ears to be saved for seed. Grading of the seed ears.

Exercises.—Have the pupils study and make the germinating test as outlined in Farmers' Bulletin 253.*

Ask the pupils to test at home all the seed corn needed for the project field. Most parents will be glad to have the pupil conduct the seed testing at home, and this will be valuable practice. From the results of these tests have the pupils estimate what would be the gain (on the basis of recent yields) resulting from the rejection of poor seed corn. If the pupils will also test some ears from the corn cribs, they will probably prove that the crib method of curing corn is not suitable for seed corn.

References.—Farmers' Bulletins 253,* pp. 8–10; 415, p. 10; 537, p. 9.

LESSON V.

Subject.—Place of corn in crop rotation.

Topics for study.—(1) Reasons for rotation: (*a*) Different crops make different requirements of the soil; (*b*) root systems differ; (*c*) crops should be selected to suit varying seasonal conditions; (*d*) the culture of one crop prepares for a succeeding crop of a particular kind; (*e*) distribution of labor. (2) Corn in systems of rotation.

Exercises.—Draw plans of the home farm, showing fields, and write in each field the crops in the order in which they were grown during the last five years. Write to the State agricultural college for (*a*) a system of crop rotation in grain farming and for (*b*) a system of rotation in live-stock farming.

References.—Farmers' Bulletins 242*; 310,* pp. 12, 13, 21, 22; 325*; 422*; 537.

LESSON VI.

Subject.—Preparation of the seed bed.

Topics for study.—Soil conditions necessary. Time of plowing. Purpose of plowing. Depth of plowing. Characteristics of a good seed bed. When should cover crops be turned under for corn?

Exercises.—Show the effect of plowing under cloddy soil, or a large cover crop, on the rise of capillary water. Also the effect of disking a cover crop or heavy coating of manure into the surface soil before turning under. Use four lamp chimneys, numbered 1, 2, 3, and 4. Fill all to a depth of 5 inches with a sandy soil. Finish filling No. 1, using good loam soil. On top of the sand in No. 2 put 1 inch of wheat or oat chaff well packed down. In No. 3 put 2 inches of fine clods. Finish filling Nos. 2 and 3 with loam soil. Complete the filling of No. 4 by using a mixture of loam and the same amount of chaff used in No. 2. Set all chimneys in about 1 inch of water. Observe and explain results.

A field is 80 rods long and 60 rods wide. How many acres? How many days will it take to plow it, allowing 2½ acres a day as fair work for man and team? What would be the cost, charging local prices?

References.—Farmers' Bulletins 414, pp. 6, 7, 13, 17, 18; 537, pp. 12, 13, 14; 729, pp. 1, 2, 3. Farmers' Bulletin 773 gives on pp. 10–12 instructions on preparing land for planting corn under droughty conditions.

LESSON VII.

Subject.—Fertilizers and how to apply them.

Topics for study.—What are the indispensable requirements for a good corn yield? What is one of the surest fertilizers for producing a large corn crop? Why? How many tons of well-decomposed and moist barnyard manure may you safely apply? Manure containing stalks or undecomposed straw may reduce the corn yield. Explain. When should the manure be applied? What element of plant food is needed most by the soils for profitable corn production in your district? What necessary elements of plant food do commercial fertilizers supply? When are such fertilizers likely to be profitable and how should they be applied? Show the relation between profitable corn production and the use of lime, ground phosphate rock, and legumes on different kinds of soils. Name the steps necessary in building up the soil permanently on a run-down farm in your district.

References.—Farmers' Bulletins 44*; 192,* p. 5; 326,* p. 10; 398*; 414, pp. 12, 13; 537, pp. 10, 11; 729, pp. 3, 4, 5, 6, 7, 8.

LESSON VIII.

Subject.—When and how to plant field corn.

Topics for study.—At what time do the best farmers in your school district plant their cornfields? What is the old Indian rule? Why do the farmers not plant earlier? Why do they wish to plant corn as early as it is safe? Do most of them plant in continuous drills or

in hills? How far are the rows spaced apart? How far apart are the hills in each row? What is a "check rower"? How many kernels are planted in a hill? What is the secret of a prize-winning corn crop?

Exercises.—How many kernels are needed to plant an acre of ground? How many ears does that require? How many farmers in your district take their seed ears from the corncrib in the spring? Is there any certain way to find whether they will grow before planting them in the field? (See p. 4.) How many kernels in a quart of good shelled seed corn of the kinds commonly grown in the locality? How many quarts are needed to plant an acre? How many bushels for 40 acres? How many bushels of shelled corn do the best farmers in your district raise on an acre? How does this compare with the best yields made by the boys' corn clubs in your State?

References.—Farmers' Bulletins 414, pp. 19–24; 537, pp. 14, 15; 729, pp. 8–13. Farmers' Bulletin 773 gives on pp. 12–16 instructions on time and methods of planting corn under droughty conditions.

LESSON IX.

Subject.—The cultivation of corn.

Topics for study.—Purposes of cultivating corn. Importance of first cultivation. Shallow cultivation. Meaning of a soil mulch. Purpose of a mulch. Proper depth. Frequency of renewal.

Exercises.—The effect of a soil mulch may be shown by filling two cans or flower pots with soil and planting corn. When the plants are 3 inches high cover the soil in one pot with a layer of coarse sand or granular dry soil to a depth of 1 inch. Place in the window and observe which plants first show the need of water.

If a man and team harrow 15 acres a day, how long will it take to harrow a field twice which is 80 rods long and 60 rods wide? What would be the cost, charging local prices?

References.—Directions for the proper cultivation of corn are given in Farmers' Bulletin 229 for the "Corn Belt States," and in Farmers' Bulletin 81* for States farther south. Farmers' Bulletin 729 gives on pp. 13–19 instructions on how to cultivate corn in the Southeastern States. Farmers' Bulletin 773, pp. 16–18. Farmers' Bulletin 537, pages 16 and 17, gives general directions for cultivating corn with a view to producing a maximum yield. Nearly every State has one or more bulletins on this subject. These should always be procured from the State agricultural college and studied in the class.

LESSON X.

Subject.—Corn diseases and pests.

Topics for study.—The corn root-louse. The chinch bug. The corn ear-worm. Weeds. Corn smut. The larger cornstalk-borer.

Exercises.—Find out from the farmers in the district whether corn has any serious pests, such as birds, insects, or diseases. If possible, have the pupils collect and preserve for the school exhibit local corn diseases and insect pests.

References.—Farmers' Bulletins 54*, pp. 18–23, 29, 30; 78*, p. 27; 537, pp. 15, 16; 634*; 733; 739.

LESSON XI.

Subject.—The food value of corn.

Topics for study.—Is most of the corn in your State fed or shipped? Which is cheaper, to ship the corn or to ship an animal that was fed on it? About how many bushels of corn are required to feed a 250-pound hog? How much would it cost to ship the corn to the nearest large stock market—Chicago, Omaha, Kansas City, or Buffalo? To ship the hog? In addition to its value as feed for stock, corn is largely used as human food. In what ways is it used as a food? What products are manufactured from corn? What ones have you seen? What samples of them do you have in your school museum?

Exercises.—When you sell $10 worth of corn from the farm you sell $3.78 worth of fertilizer; when you sell $10 worth of cattle you sell $1.18 worth of fertilizer. Which would be more profitable—to sell corn or to feed it to cattle and sell the cattle? Which method of farming would keep the land in good condition longer? Have the pupils study and recite on Farmers' Bulletins 56, 65, 97, and 122. All these deal with some phase of feeding corn to farm animals. The girls in the class will be interested in studying the value of corn as a food for human beings, as discussed particularly in Farmers' Bulletin 565.

References.—Farmers' Bulletins 97*, pp. 9–12; 249; 281*, pp. 18–22; 298; 553; 554; 559; 565.

LESSON XII.

Subject.—The botany of corn.

Topics for study.—Corn flowers: Does the corn have flowers like wheat? Where are the stamens in corn? Where are the pistils? What is the yellow powder that one sees on the ground just as the silks begin to show? Why so much of it? Why is dry weather particularly bad for corn at this time? When a cornstalk grows in a place by itself what kind of an ear does it have? Why is this? Open an ear of corn that has just "silked out." Follow the threads of silk. Where are they attached to the kernels?

(The corn stamens are normally borne in the tassel. The silks and the kernels to which they are attached are the pistils. The pollen must fall or be blown from the tassel to the silk in order to fertilize

the kernel and make it develop. There must be a great abundance of pollen, because so much is lost. Each silk extends to one kernel only.)

The corn leaves and stalks: How are the leaves arranged on the stalks? What is the position of the ears with respect to the leaves? Notice that the margin of the leaf is longer than the middle of the leaf. This makes the leaf wavy. Would this help to prevent the wind from tearing the leaves? Does the wind damage corn leaves much in your country? What do the corn leaves do in very dry weather? Is this an advantage to the corn plant? How? Cut across a cornstalk. Notice the threads that run through it. Where are they thickest—in the middle or near the outside of the stalk? These threads are woody bundles called fibro-vascular bundles. Split a stalk and see if they go the whole length of it. Do they extend into the leaf? Cut out about 3 inches of a stalk between joints. Put one end of this in water and blow through it. Through what part of the stalk does the air go? The chief function of the fibro-vascular bundles is to conduct the sap up and the prepared food down in the plant. They extend into the leaves and become the veins, and thus help to make up the leaf framework.

The joints of the cornstalk are called "nodes," and the spaces between them are called "internodes." If a stalk of corn is broken down, at what point does it begin to straighten up again? Is the node, then, of the same length all around? Which side of the internodes is flattened or channeled? Is it the same side all the way up? What other crop plants have nodes and internodes like corn? Is corn a grass plant? Is wheat, flax, clover?

Corn ears: On which side of the internode is the ear always found? Is a leaf sheath always found on the other side of the ear? Suppose the ear were borne on the end of a long branch, with leaves arranged just as they are on the stalk. Now, if you could "telescope" this branch from tip to base, so that it would be only an inch long, would the leaves, then, have the place of husks around the ear? Are the husks corn leaves? What is the short branch that bears the ear called? How does it come to be so short? Could it hold a large ear up off the ground if it were very long? Is it better to have the shank hold the ear upright or allow the tip to hang down a little? Why? What is the advantage in having the tassel at the top of the stalk? Which would be the better kind of corn to cultivate—the sort we have now, or one with long stalks and branches and with both stamens and pistils at the ends? Do we sometimes still find a few kernels in the tassels or parts of the tassel attached to the ear? (Have such specimens collected at husking time and brought to the school.) Are they the best kind of corn to plant? (Try it and see.)

Corn roots: Dig down around a hill of corn and see how near the surface the roots grow. How far do they extend from the stalk? How deep could the cultivator go without hurting these roots? (Fig. 2.) About the time that the corn tassels come out the "brace roots" appear. Find some of these roots. What is their use?

Exercises.—Bring a sufficient number of cornstalks into the schoolroom, or, better still, go with the class to a field of standing corn. Make notes of your observations in answer to questions on Topics for Study.

References.—Farmers' Bulletin 229. Textbooks on Elementary Agriculture.

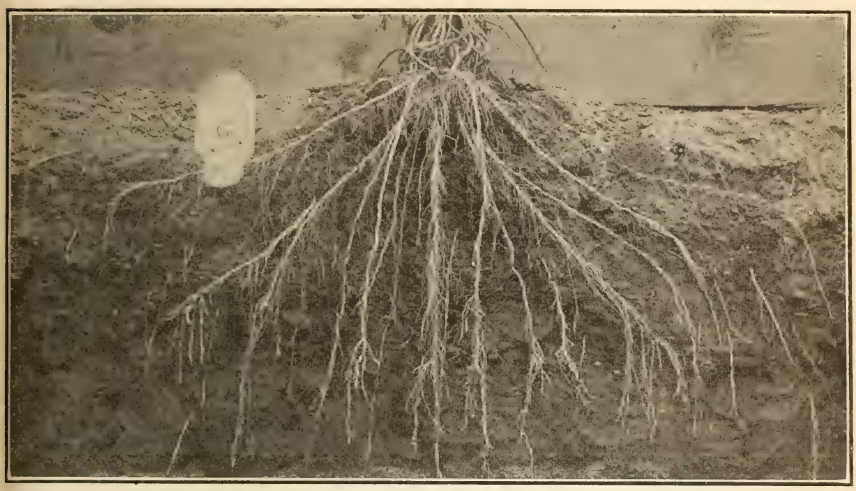

FIG. 2.—Distribution of corn roots, showing how late deep cultivation affects the roots.

ADAPTATION TO COMMUNITY.

The lessons should be adapted to the particular needs of the district served by the school. In order that the instructor may have accurate information as to the extent of corn production and the methods used, he should have the students assist him in making a survey of corn production. If this survey is made carefully it will assist in arousing interest as well as furnishing a basis for adaptation to local conditions. The following is suggestive of a report form to be used in securing information:

Corn survey.

No.	Name of farmer.	Location of field.	Purpose for which grown.	Acres.	Yield.	Special methods.
1						
2						
3						
Etc.						

USE OF TEXTS AND REFERENCES.

It should be obvious that if the lessons are to be adapted to both the students and community, a textbook can not be followed slavishly. In making adaptations, State publications and the bulletins of this department may be used to advantage. The teacher will find the recent editions of books devoted entirely to corn helpful for his personal use and for students who may be assigned special topics. Students having an interest in special phases of corn production, such as the production of pop corn, sweet corn, or corn for silage, may be assigned these subjects as special topics for written reports to the teacher or oral reports to the class. Topics such as the history of corn, methods of marketing, and the manufacture of corn products, which the entire class may not have time to study extensively, may be assigned also as special topics.

USE OF ILLUSTRATIVE MATERIAL.

In the field.—In many respects the best place to study corn is in the cornfield. Opportunity should be sought to observe the growing of the plant under natural conditions. Field trips may be planned in the spring to study methods of soil preparation and planting. The class should become familiar with the working of modern planting machinery. In the fall trips may be made to study the working of harvesting machines. Although growth has stopped at this season, it is a good time to study the effects of different methods of planting and culture. Each trip should be planned with a definite aim and each student should be required to take notes and make a written report. Students should be given every encouragement to make individual observations in the field and to report such studies to the teacher or to the class. As the growth of corn takes place mostly during the time of summer vacation, special inducement should be made to get students to study corn and methods of cultivation at this time, even though they may not have a corn project. Students should be required in the class recitation and in written papers to report methods used on the home farm.

In the classroom.—It is often more convenient to bring material into the classroom than to study it in the field. The school should be provided with an abundance of concrete material and have a place to keep it safe from mice and other pests. Specimens should be available to show the different types of corn and the leading varieties which are suitable to the district. Sample ears showing corn of different degrees toward perfection should be available for judging purposes.

Such material may be supplemented with good illustrations showing the growth of the plant as well as types and varieties. Drawings and diagrams may be made upon the blackboard to assist the students in visualizing the lesson. A chart similar to the one show-

ing the relative value of corn (fig. 3) may be drawn to show the production of corn by States, or this may be shown with dots upon an outline map of the United States.[1] Diagrams of kernels of corn showing the composition of different varieties and strains are included in some of the State publications. Such diagrams may also be copied on the blackboard. Permanent charts of convenient form may be made by using a rubber stamping outfit upon light-colored window shades. Fasteners may be fixed upon the wall to hold the chart: then when it is needed no longer it may be rolled up and put out of the way.

OBSERVING CORN DAY.[2]

To make this day a success, not only the children, but the parents, must be enlisted. The social element in it is very important. Every parent must be so interested that he will feel he must be present. Plan for an entire day given to the special occasion. If there is one in the vicinity who can give anything valuable about agriculture, secure him as a speaker. If this is done, have two programs, one in the forenoon for the speaker and one in the afternoon, when the children shall take the prominent place.

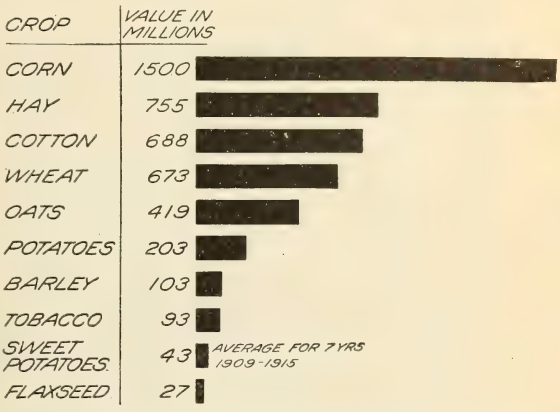

FIG. 3.—Chart showing value of ten important crops in United States.

For the children's program plan to show the results of the work done in the study of corn. Let it include the best compositions written on the more interesting phases of the work. The History of Corn, The Indian Corn Dance, The Importance of Corn in America, The Development of Breakfast Foods, The Possibilities in a Cornstalk, How Six Ears Went to Market, The Story of a Stalk of Corn, Number of Days of Work Needed for One Man and a Team to Raise and Harvest an Acre of Corn are suggested as additional subjects.

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[1] See Thirteenth Census of the United States (1910), Vol. V, Agriculture, for statistics on corn production and for suggestions as to showing statistics in graphic form. See also U. S. Dept. Agr., Bureau of Statistics Bul. 78 (1910), Agricultural Graphics, for maps showing production of crops and live stock in the United States and in the world. This publication may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents. For the latest agricutural statistics with graphic illustrations see Appendix of Yearbook of the Department of Agriculture 1915, Separate 681.

[2] Adapted from Corn Day Annual, Schools of Illinois, 1913.

The history and work of the farmers' institute should be reported by one of the older pupils. Another should give an account of what the agricultural college is doing for the State.

If sufficient interest has been aroused, a corn-judging contest might be held. For judging the corn exhibits prepared by the pupils secure some man who has studied corn judging. Be sure to make this a feature of the day, making the announcing of the results a part of the program.

Music should not be omitted from the program. Some patriotic music should be included, as should the State song.

The following program may be suggestive:

Quotation on Corn.
The Gift of Mondamin.
Hiawatha Blessing the Cornfields.
The Feast of the Mondamin.
The Corn Song.
The Place Corn Has in Our History.
From a Tiny Grain to a Mighty Ear.
The Huskers.
The Husking Bee.
Maize, Our National Emblem.
What I Think is a Good Ear of Corn.
Columbia's Emblem.
Why I Think Corn and Boys are Similar.
The Uses of Corn.
"When the Frost is On the Pumpkin."
Why Corn Should Be Our Emblem.

Plan to have dinner at the school, and use every device possible to make it a corn dinner. There are many ways in which corn can be prepared which will add to the effectiveness of the plan. If the number of people is not too large a splendid lesson in art would be the making of place cards and decorating them with some corn design. If these are not made, souvenirs of the day should be made by the pupils, carrying out the corn idea. This is one real way to teach decorative art.

For a language lesson prepare written invitations to the patrons of the school. Perhaps the form side of notes of invitation will be more vividly taught then. Be sure to include the local editor in the list of invitations. Have a report of Corn Day written by some of the pupils for the local papers.

The decoration of the school room should not be neglected. Some suggestions as to using blackboard drawings, booklets, corn products, and other work of the pupils have been given. Use some fine specimens of corn in completing the decorations. Grains of yellow, white, and red corn are full of possibilities, as are the stalks. The rooms should be decorated so as to give joy and impress the thought that the man who raises a good crop of corn is engaged in an exalted work.

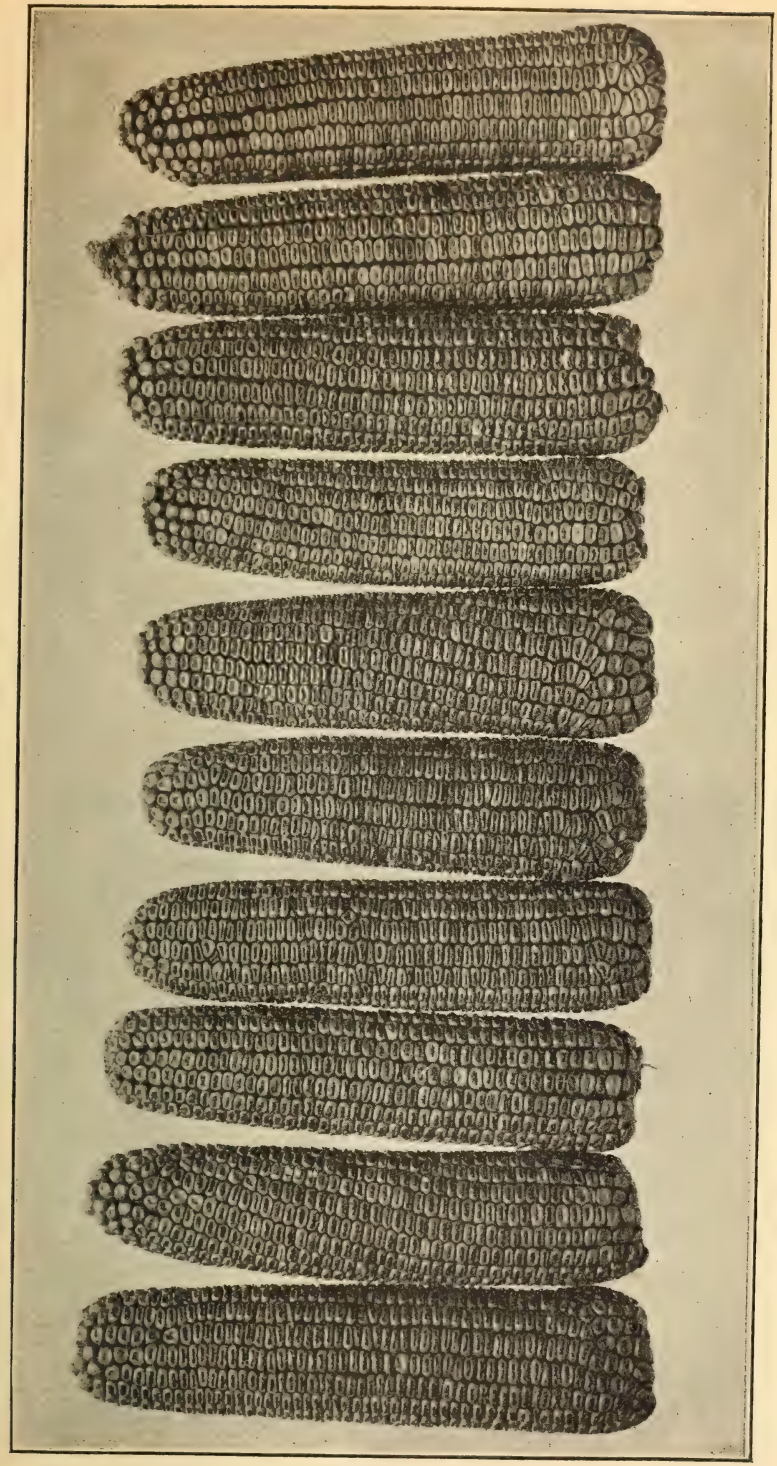

FIG. 4.—A poorly selected corn exhibit. The second ear has a pronounced "twist" in the row of kernels, and the ninth ear has a very poor tip.

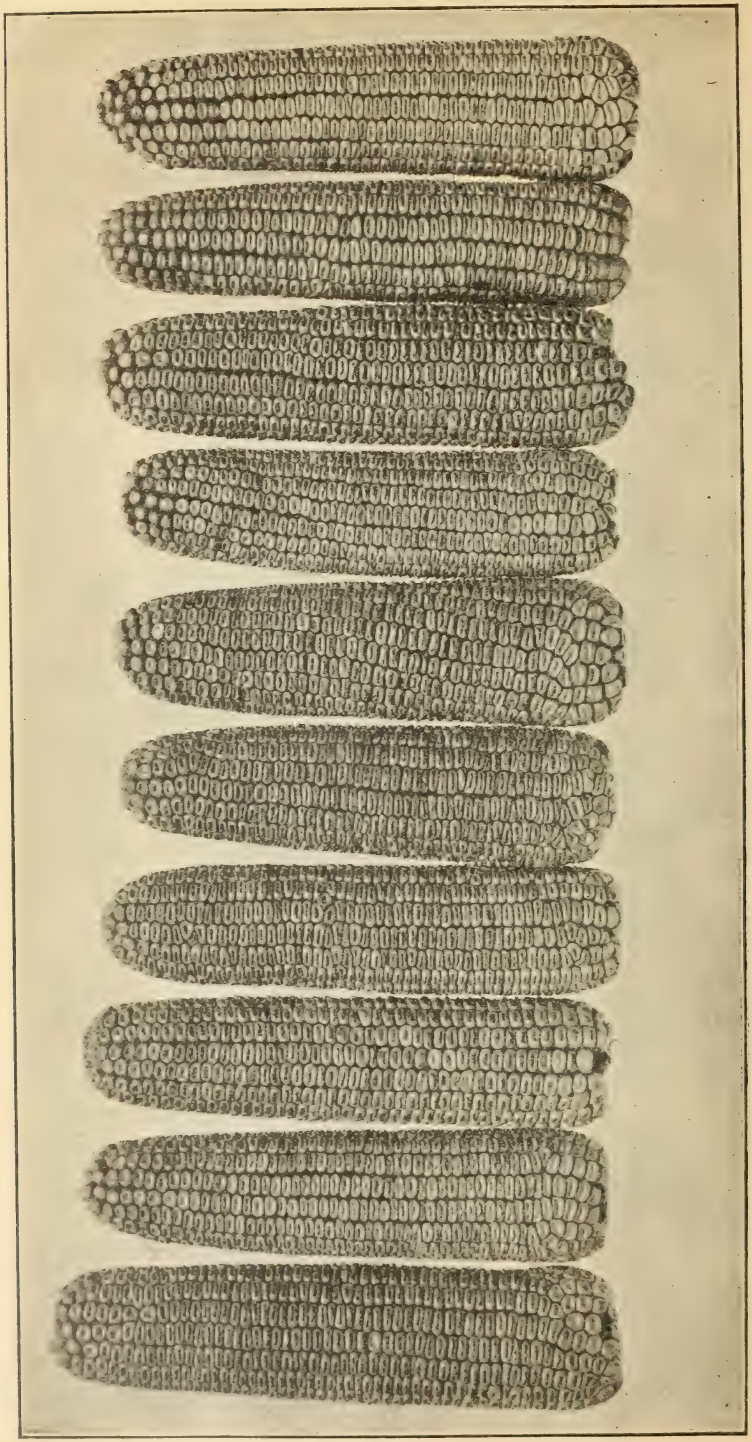

FIG. 5.—A well-selected exhibit. The substitution of two good ears for the second and ninth of figure 4 gives a satisfactory degree of uniformity to the entire set.

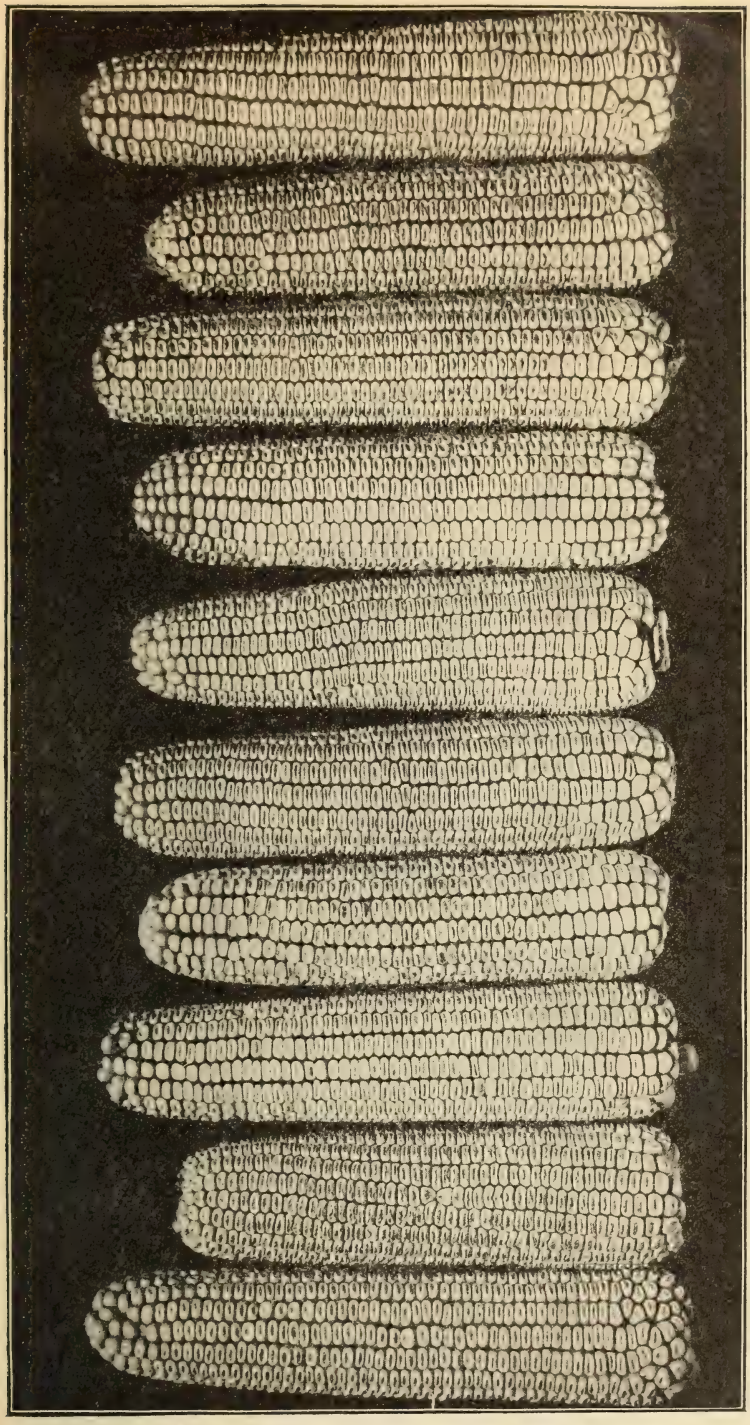

FIG. 6.—A poorly arranged exhibit, decidedly lacking in uniformity of appearance.

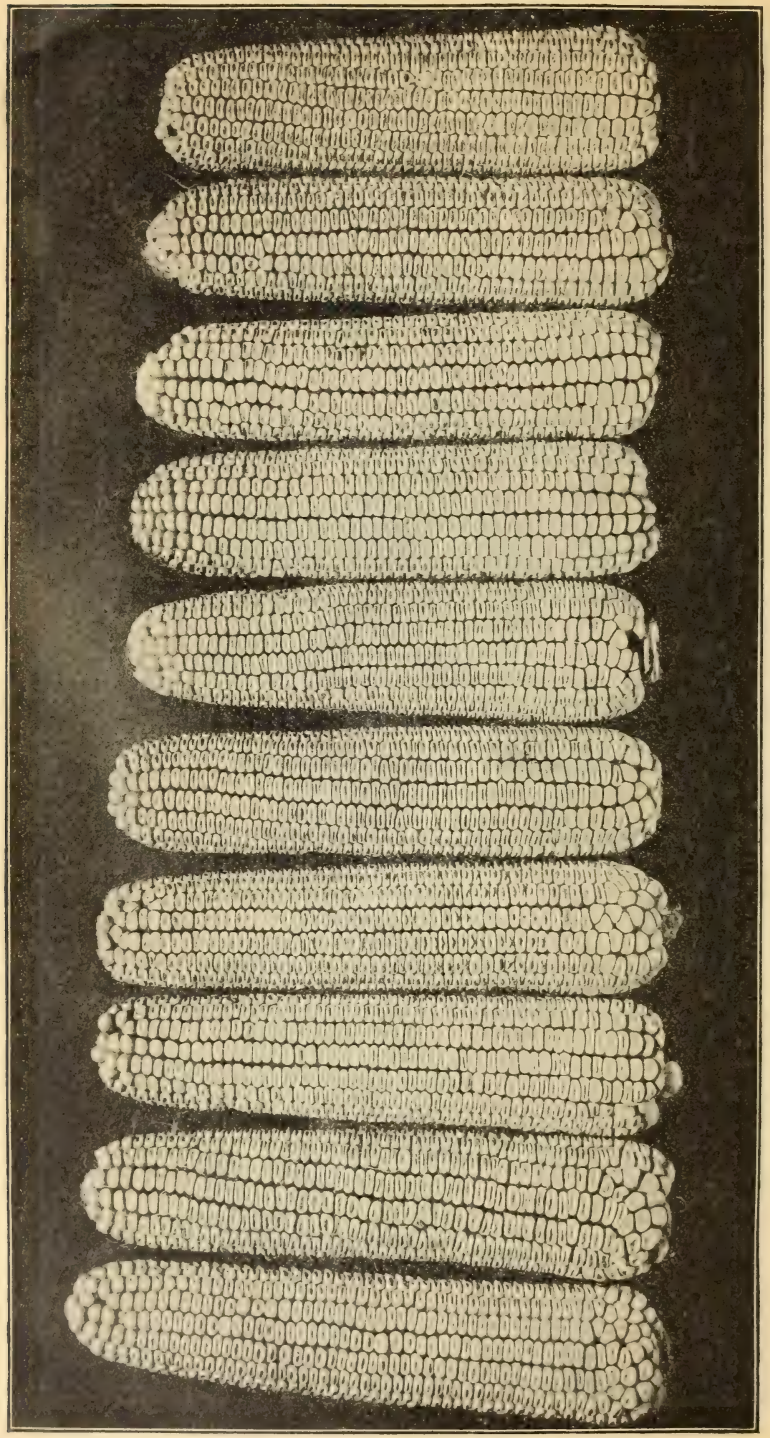

FIG. 7.—The same exhibit properly arranged; ears nicely graduated as to length.

The following letter might be sent to all patrons of the school:

DEAR FRIEND AND PATRON OF THE ——— SCHOOL:

The teachers and pupils of ——— School, in response to the suggestion of the State superintendent, have decided to have, on ———, a "Corn and Other Products Day," and we cordially invite your cooperation and attendance. Bring good samples of corn, fruit, potatoes, tomatoes, poultry, and other home or farm products that you care to exhibit, and help us to make it a day of educational value. A special program, participated in by the pupils and others, will be a feature of the day.

Please bear in mind that this is your school and that your cooperation and presence will be both a help and an inspiration.

Sincerely yours,

———— ————, *Teacher.*

SELECTING THE EXHIBIT FOR CORN DAY.

The exhibit from one person usually consists of 5 or 10 ears of corn. Sometimes a 10-ear exhibit to represent the entire local school is made up by selecting that number of ears from the best ones brought in by all the members of the school.

One very important thing to observe in choosing and arranging all such exhibits is the principle of *uniformity*. This is sometimes indicated in score cards by the phrase "uniformity of exhibit." In the score-card form shown on page — it is covered by "trueness to type" and "uniformity of kernels." These phrases all mean that in order to get a high rating all the ears in the set must *look alike* as nearly as possible. A corn judge often discards a set of 5 or 10 ears from any further consideration simply because the exhibitor included among them one ear that was an inch longer than the rest, or of a different shade in color, or that had a different number of rows of kernels, or kernels of noticeably different shape or size than those on the rest of the ears. Sometimes the size of cob in one ear differs from all the others, or one ear is crooked or has "twisted" rows of kernels, while all the rest are straight.

Any of these defects spoil the *uniformity* of the set and cause the set to be marked down severely. It is better to select 10 ears that are not the very best, but are *alike*, than to include one ear that is either much better or much worse than all the rest in the set. Pick out the best 40 or 50 ears you can find, and then from these, by careful measurement and comparison, select for your exhibit the 5 or 10 that are nearest alike.

The unfavorable impression made by a poorly selected or poorly arranged exhibit of 10 ears is clearly illustrated in figures 4 and 6 (pp. 13, 15). Without discarding any ears from the best 10 selected they can always be *arranged* in one *best* order, from left to right, so as to present whatever excellence they have in the most favorable view.

(See figs. 5 and 7, pp. 14, 16.) The corn judge may change this order before giving his final verdict, but in any case he will be disposed to give the exhibitor credit for knowing the advantages of a good arrangement. Furthermore, a good arrangement of the ears in an exhibit saves time for the judge, and that, too, is in the exhibitor's favor if the judging must be done rapidly.

SUGGESTIVE CORRELATIONS.[1]

Reading.—Utilize for supplementary reading Farmers' Bulletins, agricultural college bulletins and circulars, textbook references, and articles in farm papers and magazines dealing with the subject of corn.

Spelling.—List the new words related to the corn industry and assign them as spelling exercises.

Language lessons.—Written reports of field observations, narrations on selection of seed in the field, and descriptions of germinating boxes; plant diseases and insect pests supply material for written exercises. The pupils should have much practice in this work to the end that they may grow in power to express their ideas truthfully, systematically, adequately, and interestingly.

The pupils should be required to write letters ordering seed catalogues and asking for quotations in the prices of seed corn. In these letters strive for correct form, good composition, and courtesy in expression.

Drawing.—Make drawings of ideal and faulty specimens of the common varieties of corn grown in the district. Collect, name, and make drawings of common weed and insect pests of corn. Pupils should be encouraged to illustrate their descriptions by free-hand sketches on the blackboard. Make drawings of the important parts of machinery used in corn culture. In this connection emphasize the learning of the names and uses of implements and their parts.

History.—Study the history of the varieties of corn common to the community as to their origin, the time and circumstances of their introduction, and the success with which they have been grown. Corn culture during colonial days should be studied carefully. Study the history of weeds, insects, and fungus diseases of corn as to origin, introduction, spread, damage done, and methods of combating.

Geography.—Locate on the map of the United States the 10 States that lead in corn production. Name another important agricultural industry of these States depending largely upon the production of corn. Compare the climate and leading agricultural product of other States and other countries having the same latitude as the

[1] See U. S. Department of Agriculture Bulletins 132, Correlating Agriculture with the Public School Subjects in the Southern States, and 281, Correlating Agriculture with the Public School Subjects in the Northern States.

corn States. Explain the cause of the difference in climate and agricultural products. What cities of the United States are the leading markets and distributing points of the corn crop? Compare corn with other grains, both as to total yields and as to amounts exported.

Arithmetic.—Have pupils report these facts from their homes: The number of acres planted to corn, the prevailing rent price per acre, the total yield, the amount of fertilizers used per acre, the labor required to prepare the seed bed, cultivate, and harvest the crop. From these facts develop problems to determine the average cost of growing an acre and of producing a bushel. Find the average yield per acre and its value based on local prices. Is the corn of the community grown at a profit or loss? Find the per centum profit or loss.

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